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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,531	11/03/2003	Yong-Nien Rao	RAOY3001/EM	1415

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EXAMINER	
NGUYEN, JIMMY H	

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/698,531	RAO ET AL.	
	Examiner	Art Unit	
	Jimmy H. Nguyen	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is made in response to applicant's papers filed on 11/03/2003. Claims 1-9 are currently pending in the application. An action follows below:

Notice to Applicants

2. It is noted to Applicants that the feature of claims 7 and 9 are inherently recited in independent claims 1 and 8 since independent claims 1 and 8 expressly recite the type of the display device, i.e., a liquid crystal display device.

Claim Objections

3. Claims 2, 3, and 5 are objected to because of the following informalities: "further" in line 2 of these claims should be deleted because no element of the data driver is recited in advance. Appropriate correction is required.

4. Claim 4 is objected to under 37 CFR 1.75(a) because although this claim meets the requirement 112/2d, i.e., the metes and bounds are determinable, however --selected-- should be inserted immediately before "signals" in line 2, so as to make this feature consistent with the feature recited in line 9 of claim 3.

5. It is in the best interest of the patent community that applicant, in his/her normal review and/or rewriting of the claims, to take into consideration these editorial situations and make changes as necessary.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, and 6-9 are are rejected under 35 U.S.C. 102(e) as being anticipated by Onoya (US 2001/0034075 A1).

As to these claims, the claimed invention reads on the Onoya reference as follows: Onoya discloses a liquid crystal display (LCD) device and an associate driving method for controlling the polarity of the LCD panel, the LCD device (see Fig. 12) comprising a LCD panel (413) having plurality of pixels (415); a scanning unit (409) connected to the display panel by a plurality of scanning lines (410) so that the scanning unit controls the pixels of the display panel via the scanning lines; a polarity arrangement timing generator (PATG) (a circuitry including elements 201, 203, 207 and 208, see Fig. 8) for generating a plurality of polarity arrangement control (PAC) signals (polarity data signal and control signal, see Fig. 8); and a polarity arrangement programmable data driver (PAPDD) (a circuitry including elements 205, 206, and 412, see Figs. 8 and 12) connected to a plurality of data lines (408) and receiving the polarity arrangement control signals so as to output a set of aperiodic polarity order to the data lines so that the polarities of the pixels are distributed aperiodically (see Figs. 4 and 7). Onaya further teaches the PAPDD (205, 206, 412) including a plurality of sampling/hold registers (registers 401 and latches 403 and 404, see Fig. 12) for latching digital signals sent to the pixels of the display panel (paragraph 0318). Onaya further teaches that when the display panel displays a plurality frames, the PATG and the PAPDD control the polarity of the half of the frames opposite to the polarity of the other half of the frames (see Fig. 4). Accordingly, all the limitations of these claims are read in the Onoya reference.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeong (US 6,335,721 B1) hereinafter Jeong721 and further in view of Onoya.

As to claims 1 and 6-9, the claimed invention reads on the Jeong721 reference as follows: Jeong721 discloses a liquid crystal display (LCD) (see col. 1, line 12) and an associate driving method for controlling the polarity of the LCD panel, the LCD device comprising a LCD panel (col. 1, line 33) having a plurality of inherent pixels; a scanning unit (a gate driver, col. 5, line 13) connected to the display panel by a plurality of scanning lines so that the scanning unit controls the pixels of the display panel via the scanning lines; a polarity arrangement timing generator (PATG) (an inherent circuitry for providing a plurality of control signals such as and video signals to the source driver, see Fig. 4) for generating a plurality of polarity arrangement control (PAC) signals (POL_INT, CLK1, CLK2, LATCH_OE signals, see Fig. 4); and a polarity arrangement programmable data driver (PAPDD) (a LCD source driver as shown in Fig. 4) connected to a plurality of inherent data lines and receiving the polarity arrangement control signals (POL_INT, CLK1, CLK2, LATCH_OE signals, see Fig. 4) so as to output a set of polarity order to the data lines (see Figs. 6A and 6B). Accordingly, Jeong721 discloses all the claimed limitations of these claims except that Jeong does not expressly disclose that the PAPDD outputs a set of aperiodic polarity order to the data lines so that the polarities of the pixels are

distributed aperiodically, as presently recited in claims 1 and 8; and when the display panel displays a plurality frames, the PATG and the PAPDD control the polarity of the half of the frames opposite to the polarity of the other half of the frames, as presently recited in claims 6 and 8.

However, Onoya discloses a related LCD device comprising a PATG (a circuitry including elements 201, 203, 207 and 208, see Fig. 8) generating a plurality of polarity arrangement control (PAC) signals (polarity data signal and control signal, see Fig. 8); and a PAPDD (a circuitry including elements 205, 206, and 412, see Figs. 8 and 12) receiving the polarity arrangement control signals so as to output a set of aperiodic polarity order to the data lines so that the polarities of the pixels are distributed aperiodically (see Figs. 4 and 7). Onoya further teaches that when the display panel displays a plurality frames, the PATG and the PAPDD control the polarity of the half of the frames opposite to the polarity of the other half of the frames (see Fig. 4). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify the PATG and the PAPDD of Jeong721, in view of the teaching in the Onoya reference, because this would provide a display device capable of displaying a clear, high definition image in which flicker, vertical striping, and horizontal striping are difficult to be observed by a viewer, as taught by Onoya (see paragraphs 0049 and 0051).

As to claims 2 and 3, Jeong721 teaches the PAPDD comprising a plurality of sampling/hold registers (latch block 300 and level shift lock 400, see Fig. 4), a plurality of digital/analog (D/A) converters (D/A converter block 500, see Fig. 4), a plurality of operational amplifiers (buffer block 600 including a plurality of operational amplifiers, see claims 7 and 8),

and a plurality of polarity selectors (a switching block 700 including a plurality of switching circuits corresponding to the claimed selectors, see Fig. 4, col. 6, line 43 through col. 7, line 14). Jeong721 further teaches the output of the sampling/hold registers (300, 400) being connected to the input of the D/A converters (500), the output of the D/A converters (500) being connected to the input of the operational amplifiers (600) so that the polarity selectors select the output signals from the operational amplifiers according to the polarity arrangement control signal (POL-INT), and then output the selected signal to the pixels (see Fig. 4, col. 5, line 60 through col. 7, line 15).

As to claim 4, Jeong721 also teaches the polarities of the signals from the operational amplifiers being either positive or negative (see col. 6, lines 30-42).

As to claim 5, this claim is similar to claim 3 except for the particular location of the polarity selectors. See the rejection to claim 3 above. Accordingly, Jeong721 in view of Onoya discloses all the claimed limitations of claim 5 except for the particular location of the polarity selectors, as presently claimed. However, at the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to relocate the polarity selectors between the D/A converters and the operational amplifiers, as presently claimed, since a such modification would have involved a mere change in the location of the component. Applicants have not disclosed that the particular position of the polarity selectors as present claimed solves any stated problem, provides an advantage or is used for any particular purpose. One of ordinary skill in the art, furthermore, would have expected Jeong721's invention to perform equally well with the position of the polarity selectors (700) disposed either as shown in fig. 4 of Jeong721 or as recited in claim 5 because the selector ability to perform its function of selecting is not effected

by the location of the polarity selectors. Further, a change in location is generally recognized as being within the level of ordinary skill in the art, see **In re Japikse, 86 USPQ 70 (CCPA 1950)**. Therefore, it would have been obvious to a person of ordinary skill in this art to modify the invention of Jeong721 in view of Onoya to obtain the invention as specified in claim above.

10. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeong (US 6,008,801) hereinafter Jeong801, and further in view of Onoya.

As to claims 1 and 6-9, the claimed invention reads on the Jeong801 reference as follows: Jeong801 discloses a conventional liquid crystal display (LCD) (see Fig. 1) and an associate driving method for controlling the polarity of the LCD panel, the LCD device comprising a LCD panel (a pixel array 170) having a plurality of pixels; a scanning unit (an inherent scanning unit) connected to the display panel by a plurality of scanning lines so that the scanning unit controls the pixels of the display panel via the scanning lines; a polarity arrangement timing generator (PATG) (a circuitry including latch 110 as shown in Fig. 1 and a circuitry for generating a plurality of control signals and polarity signals as shown in Fig. 1) for generating a plurality of polarity arrangement control (PAC) signals (polarity signals POL, VLREF, VHREF, see Figs. 1 and 2); and a polarity arrangement programmable data driver (PAPDD) (a driver including elements 120-160 as shown in Fig. 1) connected to a plurality of data lines and receiving the polarity arrangement control signals (POL, VLREF, VHREF), so as to output a set of polarity order to the data lines (see Figs. 6A-6C). Accordingly, Jeong801 discloses all the claimed limitations of these claims except that Jeong801 does not expressly disclose that the PAPDD outputs a set of aperiodic polarity order to the data lines so that the polarities of the pixels are distributed aperiodically, as presently recited in claims 1 and 8; and when the display panel

displays a plurality frames, the PATG and the PAPDD control the polarity of the half of the frames opposite to the polarity of the other half of the frames, as presently recited in claims 6 and 8.

However, Onoya discloses a related LCD device comprising a PATG (a circuitry including elements 201, 203, 207 and 208, see Fig. 8) generating a plurality of polarity arrangement control (PAC) signals (polarity data signal and control signal, see Fig. 8); and a PAPDD (a circuitry including elements 205, 206, and 412, see Figs. 8 and 12) receiving the polarity arrangement control signals so as to output a set of aperiodic polarity order to the data lines so that the polarities of the pixels are distributed aperiodically (see Figs. 4 and 7). Onoya further teaches that when the display panel displays a plurality frames, the PATG and the PAPDD control the polarity of the half of the frames opposite to the polarity of the other half of the frames (see Fig. 4). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify the PATG and the PAPDD of Jeong801, in view of the teaching in the Onoya reference, because this would provide a display device capable of displaying a clear, high definition image in which flicker, vertical striping, and horizontal striping are difficult to be observed by a viewer, as taught by Onoya (see paragraphs 0049 and 0051).

As to claims 2 and 5, Jeong801 teaches the PAPDD comprising a plurality of sampling/hold registers (latches 130, 140, see Fig. 1); a plurality of digital/analog (D/A) converters (a plurality of low voltage D/A converters 151 and a plurality of high voltage D/A converter 152, see Fig. 2, col. 1, line 65 through col. 12); a plurality of polarity selectors (a plurality of multiplexors 153, see Fig. 2, col. 2, lines 13-22); and an output buffer block (180)

(see Fig. 1). Jeong801 further teaches the output buffer block including a plurality of operational amplifiers (plural buffers including plural operational amplifiers OP3 as shown in Fig. 11, col. 8, lines 26-35). Jeong further teaches the output of the sampling/hold registers (130, 140) being connected to the input of the D/A converters (151, 152), the output of the D/A converters (151, 152) being connected to the input of the polarity selectors (153) so that the polarity selectors select the output signals from the D/A converters (151, 152) according to the polarity arrangement control signals (POL, VLREF, VHREF), and then output the selected signal to the data lines through the operational amplifiers (OP3) (see Figs. 1, 1 and 11).

As to claim 3, this claim is similar to claim 5 except for the particular location of the polarity selectors. See the rejection to claim 5 above. Accordingly, Jeong801 in view of Onoya discloses all the claimed limitations of claim 3 except for the particular location of the polarity selectors, as presently claimed. However, at the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to relocate the polarity selectors following the operational amplifiers, as presently claimed, since a such modification would have involved a mere change in the location of the component. Applicants have not disclosed that the particular position of the polarity selectors as present claimed solves any stated problem, provides an advantage or is used for any particular purpose. One of ordinary skill in the art, furthermore, would have expected Jeong801's invention to perform equally well with the position of the polarity selectors (153) disposed either as shown in fig. 2 of Jeong801 or as recited in claim 3 because the selector ability to perform its function of selecting is not effected by the location of the polarity selectors. Further, a change in location is generally recognized as being within the level of ordinary skill in the art, see **In re Japikse, 86 USPQ 70 (CCPA 1950)**. Therefore, it

would have been obvious to a person of ordinary skill in this art to modify the invention of Jeong801 in view of Onoya to obtain the invention as specified in claim above.

As to claim 4, Jeong801 also teaches the polarities of the signals from the operational amplifiers being either positive or negative (see Fig. 2, col. 2, lines 13-22).

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is 571-272-7675. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JHN
June 12, 2006

Jimmy H. Nguyen
Primary Examiner
Technology Division: 2629